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(54) A process for preserving in fresh condition aromatic herbs and compositions of herbs thus obtained

(57) To aromatic herbs is added a wetting agent in an amount such that the water activity of the resulting composition is less than 0.9, defined as the ratio of the saturated water vapour pressure of the treated herb to the saturated water vapour pressure of pure water at the same temperature.

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SPECIFICATION

A process for preserving in fresh condition aromatic herbs and compositions of herbs thus obtained

5 The present invention relates to consumable aromatic herb compositions, intended to give to the dishes to which they are added organoleptic properties. It aims particularly at preserving these aromatic herbs in a fresh condition.

Aromatic herbs are in general preserved in a dry state, dehydration of these products has as a disadvantage, among others, a considerable loss of the flavour, by evaporation during drying and then by 10 oxidation during storage. This oxidation is accompanied by browning of the product, which can only be avoided by using a chemical antioxidant.

Another technique for preserving herbs consists in pasteurizing or sterilizing them. Like the preceding process, this heat treatment is also accompanied by denaturation of the taste and of the colour.

15 A third technique consists in preserving herbs in an acid environment (vinegars or other acid food products). This technique is accompanied by considerable modification of the colour, that can be explained by decomposition of the chlorophyll.

Finally, another applicable technique is deep-freezing the herbs. This technique requires the product to be maintained at negative temperatures, which represents a considerable restraint on the user. Furthermore, during de-freezing, the colour of the product changes because of the enzymatic reactions, accelerated by the 20 deterioration of the cellular walls during deep-freezing, because of the appearance of ice crystals.

None of the preceding techniques allows then, in short, good preservation of the products to be obtained. The invention aims at remedying these disadvantages by enabling fresh non-dehydrated aromatic herbs, e.g. parsley, chervil, basil, chives, tarragon, mint etc...) to be preserved at ambient temperature without heat treatment, without using chemical preservatives and without modification of their acidity.

25 To this end, the invention has as an object a process for preserving in fresh condition aromatic herbs, this process being characterized in that there is added to said herbs, at a temperature lower than or equal to the ambient temperature, at least one wetting agent in an amount such that the water activity of the resulting mixture is less than 90, and preferably between 85 and 90.

Another object of the invention is an aromatic herb composition to which is added at least one wetting 30 agent in an amount such that the water activity of this composition is less than 90 and, preferably, between 85 and 90.

It should be remembered that the water activity is a parameter which translates the availability of the water present in a substance for participating in chemical and biological processes.

In particular, the presence in a substance of hydrosoluble products having a low molecular weight makes 35 unavailable a part of the water present - the fraction of the water which serves for their dissolution - and the water activity is reduced by so much.

The water activity or "water activity Aw" is then defined as the ratio of the number N of water molecules to the sum of the number N of water molecules and of the number N' of molecules dissolved in the water.

$$40 \quad Aw = \frac{N}{N + N'}$$

This activity diminishes if the number of substances dissolved increases. Referring to Raoult's law, the 45 water activity may again be defined as the ratio between the saturating vapour pressure P of the substance considered and the saturating vapour pressure P' of pure water in the same temperature conditions.

$$50 \quad Aw = \frac{P}{P'}$$

It is the application of this latter definition which leads to the practical measurement of the Aw of a substance, such as it will be used in example 1 in the following description. This notion of water activity is particularly interesting in the field of food products, to the extent that the chemical and biological 55 degradation of a food may be inhibited by reducing the water activity. This may be obtained in particular by adding to the food hydrosoluble substances.

In the case of the invention, the applicant has discovered, unexpectedly, that the preservation of aromatic herbs is ensured by adding hydrosoluble compounds called wetting agents in an amount such that the Aw is less than 0.90 and preferably between 0.75 and 0.85.

60 Generally, the wetting agent is chosen from the group comprising the hydrosoluble salts of an alkaline metal, particularly sodium chloride, the alcoyleneglycols, particularly 1,2 - propyleneglycol, the glycols, particularly glycerol, or the sugars, particularly sucrose or sorbitol.

The preserving process of the invention causes a reduction in the number of germs during preserving below a certain value of Aw and this reduction is all the greater the smaller Aw. The tests carried out by the 65 applicant have shown that the desired bacteriostatic effect is obtained when the water activity Aw is less

than 90. Below this value, in fact, a reduction in the number of germs during storing at normal temperature is observed. Practically, water activity of 85 gives every guarantee of preservation and is compatible with a good organoleptic quality. For improving the organoleptic qualities or convenience in use, it is advantageous to add an edible oil to the preceding mixture of herbs and wetting products. This addition of 5 oil does not substantially modify the water activity and does not adversely affect the preservation of the product, while giving it a pasty consistency. The addition of oil is effected at the rate of 0.1 to 20 parts and, better still, from 1 to 10 parts approximately of oil for 100 parts by weight of the composition formed from the herbs and the wetting agent, the herbs being advantageously chopped up or divided into fragments. The following examples illustrate the invention.

10 EXAMPLE 1

100 grammes of parsley were chopped up and 30 grammes of propyleneglycol were added thereto. They were intimately mixed until complete homogeneity was obtained.

To 65 grammes of the preceding mixture there were added 35 grammes of soya oil. Again they were intimately mixed until complete homogeneity was obtained.

15 The product was left to rest for 12 hours in a closed pot. Then the water activity Aw of the mixture was measured in the following way :

A small portion (a few grammes) of the product was taken and placed in an airtight cell, in relation with a hygroscopic resistance (lithium chloride type). The resistance of the lithium chloride was measured at regular intervals by means of a Wheatstone bridge.

20 When this resistance no longer varies, that means that the relative humidity balance has been reached in the cell. As was explained above, this relative humidity balance translates, in fact, the water activity of the substance to be analysed. The resistance to the lithium chloride having been previously calibrated, the apparatus gives directly the answer in Aw. In the above example, Aw is equal to 0.87.

It was found that the composition thus prepared presents organoleptic qualities substantially similar to 25 those of fresh parsley and that it retains these qualities without appreciable modification over long periods of time.

EXAMPLE 2

The preceding example was repeated but replacing the parsley by chervil and the propyleneglycol by glycerol, so as to obtain, in the resulting composition, the following proportions in percentage by weight :

30 - chervil : 50
- glycerol : 20
- oil : 30

The water activity of this composition, measured in the same way as in example 1, is equal to 0.85.

This composition was maintained at a temperature of 25°C and its bacteriostatic development was 35 followed over the course of time. For this purpose, the number of total mesophile germs (TMG) was measured and it was discovered that it decreases regularly over the course of time in the product. 320,000 germs per gramme were in fact counted on the day of preparation of the composition, 120,000 after 6 days, 9,000 after 30 days, 1000 after 28 days and 500 after 42 days.

The same development was found for the lactobacilli which were reduced from 5,500 germs per gramme 40 on the day of preparation, to 300 after 13 days.

Similarly, the staphylococci whose presence was detected on the day of manufacture and again 6 days later, had totally disappeared on the thirteenth day.

On the yeasts and moulds no lethal effect was noted, but a growth inhibiting effect, the number of yeasts remaining stabilized at 400 per gramme, and the number of moulds at 100. This inhibiting effect is sufficient 45 to ensure perfect preservation of the product.

EXAMPLE 3

This example is intended to show the critical character of the water activity Aw for preservation of the product.

For this purpose, there was prepared, under the same conditions as for example 2, a similar composition 50 but with different proportions (% by weight) of the different constituents :

- chervil : 67
- glycerol : 13
- oil : 30

The measured water activity Aw was 93.

55 Under these conditions, the development of the TMG was noted which increased from 320,000 to 500,000 per gramme after 28 days. The rate of lactobacilli increased from 5,500 to 10,000 ; similarly the staphylococci remained present.

The yeasts and moulds developed and the presence of "candida" was in particular noted.

The composition was unconsumable after a month's preservation at ambient temperature.

60 EXAMPLE 4

This example illustrates the preservation over long periods of time of the compositions of the invention. The following composition was prepared under the same condition as those of examples 1 and 2 :

- basil : 250 parts by weight
- salt : 50 parts by weight
65 - sunflower oil : 200 parts by weight

The water activity Aw measured was 85.

The bacteriological development noted was the same as that for example 2 above.

After a year's preservation at 25°C, it was found that the product retained all its organoleptic qualities. The colour remained constant, as well as the aromatic strength.

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EXAMPLE 5

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This example illustrates the critical character of the water activity of aromatic herbs for their preservation over long periods of time.

The following composition was prepared under the same conditions as for examples 1 and 2 :

- basil	:	275 parts by weight
10 - salt	:	25 parts by weight
- sunflower		
oil	:	200 parts by weight

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This composition, which is similar to that of example 4, but with different proportions of the different constituents, had a water activity equal to 94.

15 After 3 months, this composition had become unconsumable. Its colour had yellowed considerably, its aromatic strength was very attenuated and there was noted the appearance of rancid and oxidized tastes.

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The bacteriological development found was, moreover, similar to that of example 3 above.

CLAIMS

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20 1. A process for preserving in fresh condition aromatic herbs, characterized in that there is added to said herbs, at a temperature substantially equal to the ambient temperature, a wetting agent in an amount such that the water activity of the resulting mixture is less than 90.

2. A process according to claim 1, characterized in that the wetting agent is added to the aromatic herbs 25 in an amount such that the water activity of the mixture is between 85 and 90.

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3. A process according to any of claims 1 and 2, characterized in that the wetting agent is chosen from the group formed by the hydro-soluble salts of an alkaline metal, the alcoyleneglycols, the glycols and the sugars.

4. A process according to any one of claims 1 to 3, characterized in that the wetting agent is chosen from 30 the group formed by sodium chloride, 1,2 - propyleneglycol, glycerol, sucrose and sorbitol.

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5. A process according to any one of claims 1 to 4, characterized in that the aromatic herbs are chosen from the group formed by parsley, chervil, basil, chives, tarragon and mint.

6. A composition comprising aromatic herbs, characterized in that it comprises a wetting agent in an amount such that the composition has a water activity less than 90.

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35 7. A composition according to claim 1, characterized in that the water activity is between 85 and 90.

8. A composition according to any one of claims 6 and 7, characterized in that the wetting agent is chosen from the group formed by the hydrosoluble salts of an alkaline metal, the alcoyleneglycols, the glycols and the sugars.

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9. A composition according to one of claims 6 to 8, characterized in that the wetting agent is chosen from 40 the group formed by sodium chloride, 1,2 - propyleneglycol, glycerol, sucrose and sorbitol.

10. A composition according to one of claims 6 to 9, characterized in that the aromatic herbs are chosen from the group formed by parsley, chervil, basil, chives, tarragon and mint.

11. A composition according to any one of claims 1 to 10, characterized in that it comprises furthermore 0.1 to 20% and preferably 1 to 10% approximately by weight of an edible oil.